

FORM PTO-1590 (Modified)  
REV 11-98

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

## TRANSMITTAL LETTER TO THE UNITED STATES

R.34623

DESIGNATED/ELECTED OFFICE (DO/EO/US)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5)

CONCERNING A FILING UNDER 35 U.S.C. 371

09/555376

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/DE 99/02239

20 JULY 1999

29 SEPTEMBER 1998

TITLE OF INVENTION

## ELECTRIC-MOTOR DRIVE DEVICE

APPLICANT(S) FOR DO/EO/US

LAUK, Detlef FISCHER, Ernst KARCHER, Hansjoerg HERP, Juergen MAURER, Erik  
WIEGERT, Andreas HURST, Richard WAIBEL, Anton

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
  - a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/PEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

## Items 13 to 20 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☐ Certificate of Mailing by Express Mail
20. ☒ Other items or information:

Transmittal Sheets in duplicate w/fees charged to Dep.Acct. 07-2100  
 Copy of German Text Application w/1 sheet drawing  
 Translation of German Text Application w/1 sheet drawing  
 Preliminary Amendment  
 Copy of PCT/RO/101, PCT/ISA/210, 220,  
 Executed Declaration (not enclosed)  
 Assignment to Robert Bosch GmbH (not enclosed)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.5)

INTERNATIONAL APPLICATION NO.

ATTORNEY'S DOCKET NUMBER

09/555376

PCT/DE 99/02239

R.34623

21. The following fees are submitted:

**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**

- ☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... \$970.00
- ☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... \$840.00
- ☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$690.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... \$670.00
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$96.00

**ENTER APPROPRIATE BASIC FEE AMOUNT =**

\$840.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☒ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$130.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	- 20 =	0	x \$18.00	\$0.00
Independent claims	- 3 =	0	x \$78.00	\$0.00
Multiple Dependent Claims (check if applicable)			<input type="checkbox"/>	\$0.00

**TOTAL OF ABOVE CALCULATIONS = \$970.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐

\$0.00

**SUBTOTAL = \$970.00**

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00

**TOTAL NATIONAL FEE = \$970.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00

**TOTAL FEES ENCLOSED = \$970.00**

Amount to be:  
refunded \$  
charged \$

- ☐ A check in the amount of \_\_\_\_\_ to cover the above fees is enclosed.
- ☒ Please charge my Deposit Account No. **07-2100** in the amount of **\$970.00** to cover the above fees.  
A duplicate copy of this sheet is enclosed.
- ☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **07-2100** A duplicate copy of this sheet is enclosed.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

**SEND ALL CORRESPONDENCE TO:**

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NAME

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REGISTRATION NUMBER

30 May 2000

DATE

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Detlef Lauk et al

Based on PCT/DE 99/02239

For: Electric-Motor Drive Device

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

**IN THE SPECIFICATION**

Page 1, between lines 1 and 2, insert --Background of the Invention--;

line 2, delete "Prior Art" and insert --Field of the Invention--;

line 3, delete "is based on an" and insert --relates to--;

same line, delete "device" and insert --devices and more particularly to improve electric motor drives--;

lines 5 and 6, delete "as generically defined by the preamble to claim

1";

between lines 6 and 7, insert --Description of the Prior Art--;

line 7, delete "(" and insert --disclosed in--;

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line 8, delete ")";

line 13, delete "an also" and insert --another--;

same line, delete "(" and insert --disclosed in--;

line 14, delete ")".

Page 2, line 1, delete "Advantages" and insert --Summary--;

lines 2 and 3, delete "having the characteristics of claim 1";

delete lines 20-22;

line 24, delete "in".

Page 4, line 1, before "Drawing" insert --Brief Description of the--;

delete lines 2 and 3, and insert --The above features and advantages of the invention will be apparent from the detailed description contained herein below, taken in conjunction with the drawing, in which;--.

Page 6, after line 12 insert the following paragraph:

--The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments are thereof possible within the spirit and scope of the invention, the latter being defined by the appended claims.--.

#### IN THE CLAIMS

Page 7, line 1, delete "Claims" and insert --We Claim--.

Cancel claims 1-7 and add new claims 8-20.

8. An electric-motor drive device for auxiliary devices in motor vehicles, such as sliding roofs, window controls, windshield wipers, and the like, having a gear housing

(17) and a cup-shaped motor housing (13) that is slipped with its opening edge (131) onto the gear housing (17) and fixed thereon, the improvement wherein the motor housing (13), in its slip-on region that fits over the gear housing (17), is roller-burnished into the gear housing (17).

9. The drive device of claim 8, wherein the roller-burnishing is done at two points axially spaced apart from one another.

10. The drive device of claim 8, wherein the gear housing (17), in the slip-on region of the motor housing (13), has an annular groove (20) into which an encompassing annular bead (22), stamped out of the motor housing (13) by roller-burnishing, protrudes with positive engagement.

11. The drive device of claim 8, wherein on the gear housing (17) in the motor housing slip-on region, an encompassing radial shoulder (21) remote from the motor housing (13) is embodied, which is engaged from behind by an annular collar (23) bent inward from the motor housing (13) by roller-burnishing.

12. The drive device of claim 8, wherein the motor housing (13) encloses a stator (14), which comprises a short-circuit ring (15) and permanent segments (16) secured to it, and that an encompassing, angular chamfer (18) is made by turning into the face end of the gear housing (17) oriented toward the motor housing (13), onto

which chamfer the short-circuit ring (15) is slipped with positive engagement until its annular end face meets the radial leg face (181) of the chamfer (18).

13. The drive device of claim 11, wherein the gear housing (17), in its motor housing slip-on region, has an annular rib (24) protruding radially from the outer circumference, whose annular rib face forms the radial shoulder (21) and whose other annular rib face forms a radial extension of the radial leg face (181) of the chamfer (18).

14. The drive device of claim 13, wherein the motor housing (13), on its opening edge (131) oriented toward the gear housing (17), is radially widened and is braced on both annular rib faces of the annular rib (24).

15. The drive device of claim 9, wherein the gear housing (17), in the slip-on region of the motor housing (13), has an annular groove (20) into which an encompassing annular bead (22), stamped out of the motor housing (13) by roller-burnishing, protrudes with positive engagement.

16. The drive device of claim 9, wherein on the gear housing (17) in the motor housing slip-on region, an encompassing radial shoulder (21) remote from the motor housing (13) is embodied, which is engaged from behind by an annular collar (23) bent inward from the motor housing (13) by roller-burnishing.

17. The drive device of claim 10, wherein on the gear housing (17) in the motor housing slip-on region, an encompassing radial shoulder (21) remote from the motor housing (13) is embodied, which is engaged from behind by an annular collar (23) bent inward from the motor housing (13) by roller-burnishing.

18. The drive device of claim 9, wherein the motor housing (13) encloses a stator (14), which comprises a short-circuit ring (15) and permanent segments (16) secured to it, and that an encompassing, angular chamfer (18) is made by turning into the face end of the gear housing (17) oriented toward the motor housing (13), onto which chamfer the short-circuit ring (15) is slipped with positive engagement until its annular end face meets the radial leg face (181) of the chamfer (18).

19. The drive device of claim 10, wherein the motor housing (13) encloses a stator (14), which comprises a short-circuit ring (15) and permanent segments (16) secured to it, and that an encompassing, angular chamfer (18) is made by turning into the face end of the gear housing (17) oriented toward the motor housing (13), onto which chamfer the short-circuit ring (15) is slipped with positive engagement until its annular end face meets the radial leg face (181) of the chamfer (18).

20. The drive device of claim 11, wherein the motor housing (13) encloses a stator (14), which comprises a short-circuit ring (15) and permanent segments (16) secured to it, and that an encompassing, angular chamfer (18) is made by turning into the face end of the gear housing (17) oriented toward the motor housing (13), onto

which chamfer the short-circuit ring (15) is slipped with positive engagement until its annular end face meets the radial leg face (181) of the chamfer (18).

IN THE ABSTRACT

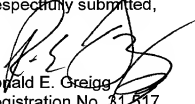
Please substitute the attached Abstract for the abstract as originally filed.

REMARKS

The above amendments are being made to place the application in better condition for examination.

Entry of the amendment is respectfully solicited.

Respectfully submitted,

  
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11 PRIS

526 Rec'd PCT/PTO

09/555376  
30 MAY 2000

ELECTRIC-MOTOR DRIVE DEVICE

Prior Art

The invention is based on an electric-motor drive device for auxiliary devices in motor vehicles, such as sliding roofs, window controls, windshield wipers, and the like, as generically defined by the preamble to claim 1.

In a known drive device of this type (German Utility Model DE 92 06 269 U1), the cup-shaped or cap-shaped motor housing is slipped onto a cylindrical post of the gear housing; the edge of its cap is covered by an annular flange embodied on the post. Between the edge of the cap and the annular flange, there is a sealing ring.

In an also known drive device (German Patent Disclosure DE 25 56 240 A1), the fixation of the gear housing and motor housing to one another is done by providing each housing with a radial shoulder, which after the two housings have been joined together is located spaced apart from and in front of the shoulder of the other housing, and a fastening element that has clamping faces cooperating in wedgelike fashion with the shoulders clamps the two housings together.

## Advantages of the Invention

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The drive device of the invention having the characteristics of claim 1 has the advantage over the prior art that production is simplified and thus made less expensive by eliminating the shoulders, which have to be formed separately on the housings, and the loose fastening element. Also eliminated are elements protruding past the outside diameter of the housings, so that the requisite installation space for the drive device is reduced. The roller-burnishing according to the invention assures an improved introduction of force from the motor housing to the gear housing and a rigid connection between the housings, with a favorable effect on noise produced by the drive device. At the same time, by the large-area, intimate bond between the housings that is attained, an improved heat transfer from the motor housing to the gear housing and thus improved heat dissipation from the motor are attained. Furthermore, the roller-burnished connection brings about good sealing at the transition between the two housings.

By means of the provisions recited in the other claims, advantageous refinements of and improvements to the drive device defined by claim 1 are possible.

In a preferred embodiment of the invention, the roller-burnishing in is performed at two points, longitudinally spaced apart from one another, in the slip-on region of the

motor housing onto the gear housing. This creates a very reliable connection, in which for long periods, even under extreme operating conditions, no play can occur between the two housings.

5 In an advantageous embodiment of the invention, the gear housing, in the slip-on region of the motor housing, has an annular groove into which an encompassing annular bead, stamped out of the motor housing by roller-burnishing, protrudes with positive engagement. The provision of the annular groove makes it easier to press the motor housing material into the gear housing, and only much-reduced roller-burnishing forces are required. A good positive engagement connection is created between the annular groove and the annular bead.

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Drawing

The invention is described in further detail below in terms of exemplary embodiments shown in the drawing.

5 Figs. 1 and 2, each in fragmentary form, show an electric-motor drive device for auxiliary devices in motor vehicles, in accordance with a first and second exemplary embodiment, respectively.

Description of the Exemplary Embodiments

10 The electric-motor drive device, shown in fragmentary form in each of Figs. 1 and 2, for instance for adjusting sliding roofs, window controls, vehicle seats, and the like in motor vehicles, has an electric motor 11 and for stepping down the motor rpm a gear 12, preferably a worm gear. All that can be seen of the electric motor 11 in Figs. 1 and 2 is the motor housing 13 and the stator 14 that is enclosed by the motor housing 13; in a known manner, the stator comprises a short-circuit ring 15 and permanent magnet segments 16 secured to it. All that can be seen of the gear 12 is the gear housing 17 in fragmentary form. The cap-shaped or cup-shaped motor housing 13, also known as a pole pot, is slipped with its opening edge 131 onto the gear housing 17 and roller-burnished into the gear housing 17 in the slip-on region at two longitudinally spaced apart points. An encompassing, angular chamfer 18 is made by turning into the face end 171 of the

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gear housing 17 toward the motor housing 13, and the short-circuit ring 15 is slipped by positive engagement onto the chamfer until its annular end face meets the radial leg face 181 of the chamfer 18. A cap-shaped indentation 19 is coaxially recessed out of the bottom 132 of the cup-shaped motor housing 13 and serves to receive a bearing for the rotor shaft of the electric motor 11.

In the exemplary embodiment of Fig. 1, in the slip-on region of the motor housing 13, an annular groove 20 on the one hand and an encompassing radial shoulder 21 on the other, which points away from the motor housing 13, are formed in the gear housing 17. By placing a roller-burnishing tool against the motor housing 13 in the region of the annular groove 20, an encompassing annular bead 22 is stamped out of the motor housing 13; it protrudes with positive engagement into the annular groove 20. By placing the roller-burnishing tool against the end portion of the opening edge 131 of the motor housing 13 behind the radial shoulder 21, an inward-bent annular collar 23 is created, which engages the radial shoulder 21 from behind. By means of these two roller-burnishing operations, the motor housing 13 is joined solidly and permanently to the gear housing 17.

In the exemplary embodiment of Fig. 2, the annular groove for roller-burnishing in of an annular bead is dispensed with, and instead, an annular rib 24 protruding radially from the outer circumference of the gear housing is machined out of the



## Claims

1. An electric-motor drive device for auxiliary devices in motor vehicles, such as sliding roofs, window controls, windshield wipers, and the like, having a gear housing (17) and a cup-shaped motor housing (13) that is slipped with its opening edge (131) onto the gear housing (17) and fixed thereon, characterized in that the motor housing (13), in its slip-on region that fits over the gear housing (17), is roller-burnished into the gear housing (17).
2. The drive device of claim 1, characterized in that the roller-burnishing in is done at two points axially spaced apart from one another.
3. The drive device of claim 1 or 2, characterized in that the gear housing (17), in the slip-on region of the motor housing (13), has an annular groove (20) into which an encompassing annular bead (22), stamped out of the motor housing (13) by roller-burnishing, protrudes with positive engagement.
4. The drive device of one of claims 1-3, characterized in that on the gear housing (17) in the motor housing slip-on region, an encompassing radial shoulder (21) remote from the motor housing (13) is embodied, which is engaged from behind by an annular collar (23) bent inward from the motor housing (13) by roller-burnishing.



5. The drive device of one of claims 1-4, characterized in that the motor housing (13) encloses a stator (14), which comprises a short-circuit ring (15) and permanent segments (16) secured to it, and that an encompassing, angular chamfer (18) is made by turning into the face end of the gear housing (17) oriented toward the motor housing (13), onto which chamfer the short-circuit ring (15) is slipped with positive engagement until its annular end face meets the radial leg face (181) of the chamfer (18).

6. The drive device of claim 4 or 5, characterized in that the gear housing (17), in its motor housing slip-on region, has an annular rib (24) protruding radially from the outer circumference, whose annular rib face forms the radial shoulder (21) and whose other annular rib face forms a radial extension of the radial leg face (181) of the chamfer (18).

7. The drive device of claim 6, characterized in that the motor housing (13), on its opening edge (131) oriented toward the gear housing (17), is radially widened and is braced on both annular rib faces of the annular rib (24).

## Abstract

In an electric-motor drive device for auxiliary devices in motor vehicles, such as sliding roofs, window controls, windshield wipers, and the like, having a gear housing (17) and a cup-shaped motor housing (13) that is slipped with its opening edge (131) onto the gear housing (17) and fixed thereon, to reduce manufacturing costs and the requisite installation space and improve force introduction from the motor housing (13) to the gear housing (17), the motor housing (13), in its slip-on region, is roller-burnished into the gear housing (17) (Fig. 1).

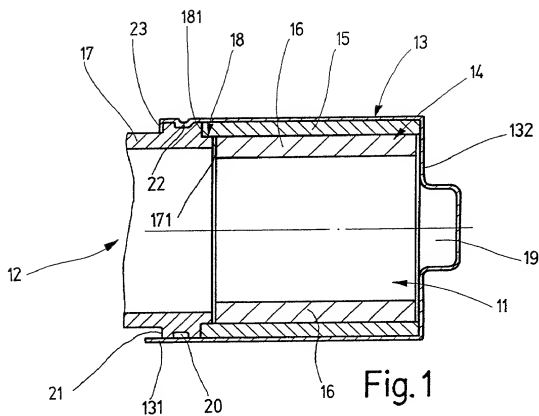


Fig. 1

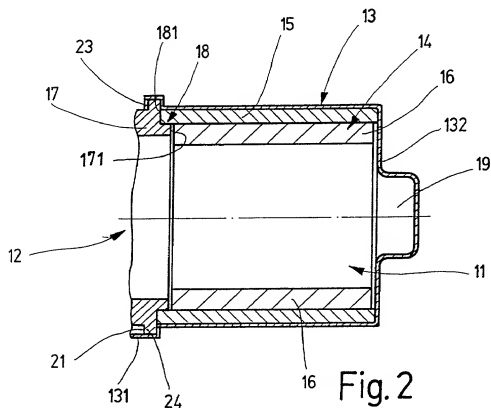


Fig. 2

# Declaration and Power of Attorney For Patent Application

## English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

ELECTRIC-MOTOR DRIVE DEVICE

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on 20 JULY 1999 as United States Application No. or PCT International Application Number PCT/DE 99/02239 and was amended on \_\_\_\_\_

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

<u>1 98 44 601.2</u>	<u>GERMANY</u>	<u>29 SEPTEMBER 1998</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)		
<u>                    </u>	<u>                    </u>	<u>                    </u>	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)		
<u>                    </u>	<u>                    </u>	<u>                    </u>	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)		

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)  
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)  
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)  
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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